

Enhancing Plants for Western Rangelands

Western rangelands are getting a helping hand from ARS researchers at the Forage and Range Research Laboratory in Logan, Utah. There, scientists are collecting and improving—through selective breeding—hardy native plants to protect, beautify, and boost the productivity of rangeland ecosystems throughout the West. These wildlands provide forage for livestock and wildlife, water for cities and industries, and wide-open spaces perfect for hiking, camping, fishing, hunting, and other outdoor pursuits.

This issue of *Agricultural Research* describes three native plant varieties that the Logan scientists helped develop. Timp Utah sweetvetch, Rimrock Indian ricegrass, and Sand Hollow squirreltail each have passed the Logan lab's scrutiny.

Earlier investigations at Logan have produced other new options for seeding western sites. The team, for instance, has combined the best traits of two native grasses—thickspike wheatgrass and bluebunch wheatgrass—into a unique hybrid line called SL-1. This vigorously growing plant provides nutritious forage for animals.

Too, Logan tests of plants called globemallows have yielded two species well-suited for planting on mine spoils or along roadsides. Scarlet globemallow and Munroe globemallow are drought- and heat-tolerant, as well as winter-hardy. And their brilliantly colored flowers make these globemallows a pleasing addition to small seed packets sold for home gardens or to the big bags of wildflower seed mix for more extensive plantings.

Today's ARS studies of other promising native species may also open the door to wider use of native plants. A bluebunch wheatgrass now in the final stages of

testing, for example, is the result of cross-breeding parent plants from 25 different sites throughout 6 western states and British Columbia.

The genetic diversity of this "multiple-origin polycross" exceeds that of any bluebunch wheatgrass sold commercially in the United States today. The broad-based lineage of this new polycross should significantly enhance its ability to survive and flourish throughout the species' native range.

Other experiments deal with an intriguing race of Great Basin wildrye that produces attractive bluish foliage. With further development, this drought-tolerant plant might be sold at nurseries for low-maintenance gardens.

Many of the experiments with native plants are meant to provide nutritious forage for cattle, sheep, deer, elk, buffalo, and other livestock and wildlife. But one innovative project at Logan has the opposite intent. Studies of a plant called robust needlegrass are designed to take advantage of the fact that animals find the plant unpalatable if the seed is infected with a natural fungus called *Neotyphodium*.

Further tests may reveal whether planting *Neotyphodium*-infected robust needlegrass along roadsides could discourage animals from grazing too close to roadways. That could help prevent the collisions that can injure or kill the animals—or motorists.

Though the Logan lab has probably collaborated in the release of more plant species native to American rangelands than any other ARS team, the Utah scientists work with introduced plants as well. Some of these plants are descendants of parent plants collected—as seed—many decades ago by USDA plant explorers.

The lineage of other varieties extends to plant seed graciously provided by collaborators working at research institutes around the globe. Still other introduced plants result from the Logan scientists' own international expeditions

to collect plants. These arduous ventures have taken them to some of the most remote places on Earth.

Why is there a need to collect, selectively breed, and release introduced plants? In some circumstances, introduced plants can do a better and faster job than most native species of bringing certain American rangeland sites back to health. When used properly, the introduced plants do not threaten to outcompete native vegetation.

The Logan work is part of a national ARS effort to protect and enhance the health and biodiversity of America's 1.2 billion acres of rangeland. This research goal is a priority not only with the Utah team, but also with ARS research units at more than two dozen other locations throughout the United States.

The long-term productivity of American rangelands depends on choosing the best plant for each ecosystem. Our research helps ensure that the individuals responsible for managing and protecting America's rangelands always have the best possible array of plant species for that job.

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